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Address: Clifford B. Frith, P.O. Box 581, Malanda, Queensland, Australia 4885.

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## Sexual dimorphism in the Javan Hawk-eagle *Spizaetus bartelsi*

by Vincent Nijman & Resit Sözer

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The Javan Hawk-eagle *Spizaetus bartelsi* is considered to be one of the world's least known raptors (van Balen & Meyburg 1994). It is endemic to the island of Java, Indonesia, where it is confined to the lowland and montane forest areas. Although in the last few years new information has been accumulated on its distribution and status (van Balen & Meyburg 1994, Sözer & Nijman 1995b) and some data have been added to our knowledge of aspects of its behaviour (van Balen *et al.* 1994, Nijman & Sözer 1995a), the knowledge we have of the species remains limited. Very little is known about demography and population dynamics, as is the case with many other rain-forest raptors (*cf.* Thiollay 1994). The total number of breeding pairs throughout the island is estimated at between 81 and 108 (Sözer & Nijman 1995a). By virtue of this low number, continuing habitat loss and trade the species is considered to be endangered according to the IUCN threat criteria (Collar *et al.* 1994).

Birds of prey are amongst the few groups of birds in which reversed size dimorphism has evolved, the female being larger than the male. The size differences in some species may be slight and barely noticeable, while in others the female may weigh almost twice as much as her mate (e.g. European sparrowhawk *Accipiter nisus*; Opdam 1975). This degree of size difference between the sexes is also linked to

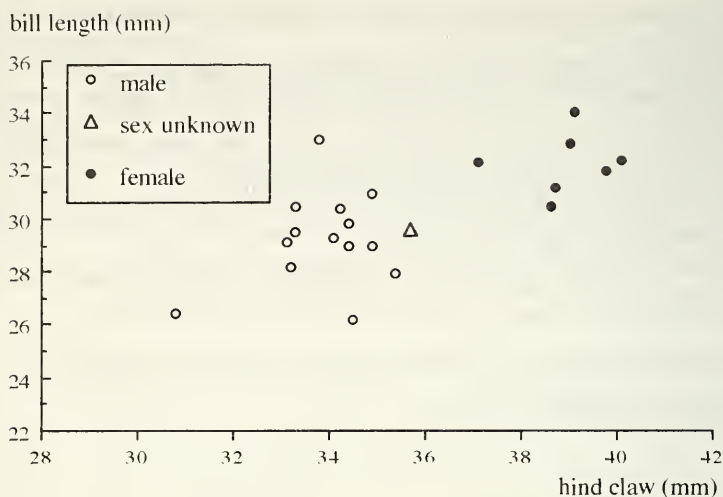


Figure 1. Sexual dimorphism in Javan Hawk-eagle *Spizaetus bartelsi* expressed in bill length-hind claw length differences.

feeding habits. In general, the faster and more agile the prey, the greater the degree of dimorphism in the raptor. Thus, there are no consistent size differences between the sexes in carrion feeders or, if there are, the male is bigger than the female, as in non-raptorial birds; and the most dimorphic of all are the predators on birds (Newton 1979). In general, the more dimorphic a raptor species is the larger the prey is relative to the body size of the raptor. Hitherto, sexual dimorphism has not been reported for the Javan Hawk-eagle, but it is known for other members of the same genus (e.g. *S. ornatus*, Klein *et al.* 1988, Dunning 1994; *S. nipalensis*, Dunning 1994).

In this paper we present data on sexual dimorphism in the Javan Hawk-eagle, based on study of bird skins and, to a lesser extent, field data. Measurements were taken of 23 skins, held in the collections of the National Museum of Natural History, Leiden, the Netherlands (hereafter RMNH) and the Zoological Museum, Bogor, Indonesia (MZB). The sample consisted of 16 males, 6 females and one of unknown sex (a downy chick in the collection of the RMNH was excluded from the sample).

As shown in Figure 1, the segregation of male and female Javan Hawk-eagles, expressed in hind claw/bill length, is complete. The segregation is also evident when expressed in tail/wing length (Sözer & Nijman 1995a). A skin of unidentified sex (MZB No. 17347), an immature with an estimated age of three years, is grouped with the males. In the field the distinction between male and female, especially when seen together or shortly after one another, is also clear. The female is larger and more robust, although still with the slender appearance characteristic of the species.

The degree of difference in the hind claw and bill between the sexes suggests that there are probably differences in the diets of male and female. Unfortunately the diet of the Javan Hawk-eagle is little known. Reported items include: large fruitbat *Cynopterus* sp., stink-badger *Mydaus javanensis*, a squirrel, rat-sized mammals, lizard and snake, and chicken *Gallus* sp. Sody (1920) stated that a juvenile Javan Hawk-eagle (identified by him as a Changeable Hawk-eagle *Spizaetus cirrhatus*) kept by him as a pet refused to take mammalian meat. The matter remains open for further research.

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Address: Vincent Nijman & Resit Sözer, Institute of Systematics and Population Biology, University of Amsterdam, P.O. Box 94766, 1090 GT Amsterdam, The Netherlands.